WHAT IS CLAIMED IS:

1. A mesoporous platinum electrode for detecting biochemical substrate, comprising an electrode and a mesoporous platinum layer covering the surface thereof.

2. The mesoporous platinum electrode of claim 1, wherein the electrode is a noble metal or an acid-resistive metal.

3. The mesoporous platinum electrode of claim 1, wherein the electrode is selected from the group consisting of carbon, platinum, gold, silver, and stainless steel.

4. The mesoporous platinum electrode of claim 1, wherein the mesoporous platinum layer has pores with diameters between 2 and 50 nm.

5. The mesoporous platinum electrode of claim 1, wherein the mesoporous platinum layer has a thickness of 20 – 5000 nm.

6. The mesoporous platinum electrode of claim 1, wherein the biochemical substrate is one or more material selected from the group consisting of saccharide, electrochemically active protein and amino acid

7. The mesoporous platinum electrode of claim 6, wherein the saccharide is glucose, galactose, fructose, lactose, maltose or sucrose.

8. The mesoporous platinum electrode of claim 6, wherein the electrochemically active protein is protein comprising redox active group like hemin, Cu(II), FeS, flavin mononucleotide, flavin adenine dinucleotide, or disulfide.

9. The mesoporous platinum electrode of claim 6, wherein the amino acid is Tyr or Trp

10. A method for detecting a biochemical substrate comprising:

obtaining a mesoporous platinum electrode including a electrode with a mesoporous platinum layer covering a surface thereof;

contacting a sample solution expected to contain the biochemical substrate with the mesoporous platinum electrode;

detecting a response current generated by applying a voltage to the mesoporous platinum electrode.

11. The method of claim 10, wherein the electrode is a noble metal or an acid-resistive metal.

12. The method of claim 10, wherein the electrode is selected from the group consisting of carbon, platinum, gold, silver, and stainless steel.

13. The method of claim 10, wherein the mesoporous platinum layer has pores with diameters between 2 and 50 nm.

14. The method of claim 10, wherein the mesoporous platinum layer has a thickness of 20 - 5000 nm.

15. The method of claim 10, wherein the biochemical substrate is

saccharide selected from the group consisting of glucose, galactose, fructose, lactose, maltose and sucrose;

electrochemically active protein comprising redox active group like hemin, Cu(II), FeS, flavin mononucleotide, flavin adenine dinucleotide, or disulfide; or

amino acid selected from the group consisting of Tyr and Trp.

16. The method of claim 10, wherein the biochemical substrate is measured in a sample of water, blood, urine, serum or PBS buffer.

17. The method of claim 10, wherein the current is measured amperometrically.

18. The method of claim 10, wherein a range of the applying voltage is between –0.1 and 0.5 V vs. a reference electrode.

19. The method of claim 18, wherein the reference electrode is Ag/AgCl.

20. The method of claim 10, wherein the current generated is proportional to glucose present in the sample from a range of 0 to 20 mM glucose.